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Some North American Botanists.

II. JOHN TORREY.[1]

John Torrey was born in New York City, Aug. 15, 1796. His father, originally from New England, was a Captain in the Continental army and was among those who entered the city upon its evacuation by the British forces.

Of the boyhood of Dr. Torrey we know but little; he attended the public schools and was for a year at a school in Boston.

When a mere boy, while upon a visit in the country (the upper part of Manhattan Island was then "the country,") he saw two young men pass along the road, all travel-stained and laden with strange parcels. The unusual appearance of these young men prompted him to inquire about them, and he was told that they were "the Le Conte boy" and another whose name is forgotten, and that they were "botanists." Young Torrey for the first time saw a botanist, and he looked upon him as a curiosity, little thinking that he himself would in time be a chief among botanists. The "Le Conte boy" afterwards became the celebrated Major Le Conte, who contributed largely to botany and other sciences.

While still a youth it was Dr. Torrey's fortune to be brought into relations with Amos Eaton, who was the great instructor in popular science of his day, and it was through his teachings that he first learned the rudiments of botany.

Up to the time he became a medical student we know but little of his career. He had a marked natural talent for practical mechanics, and at one time seriously entertained the idea of becoming a machinist. He ultimately chose the medical profession and entered the office of Dr. Wright Post, the eminent physician and surgeon of his day.

Either during his apprenticeship, as it was then called, or after he entered the college of Physicians and Surgeons, he was an interested attendant upon the botanical lectures of the eminent Dr. Hosack, at the Elgin Botanical Garden. At that time young Torrey was an industrious collector and often carried to Dr. Hosack the fruits of his herborizations.

As a medical student Dr. Torrey must have devoted much time to botany, as his "Catalogue of the Plants growing spontaneously within thirty miles of New York" was presented to the Lyceum in 1817, which was a year before he took his degree.

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[1] An abridgement of a biographical sketch by Dr. George Thurber, prepared by the Editor of the *Bulletin of the Torrey Botanical Club.*

While yet a student of medicine, Dr. Torrey was one of the founders of the New York Lyceum of Natural History and, during its early career, was one of its most active members and contributed to its Annals many of its most important papers. In this mention of the Lyceum it may be well to state that by acting as its curator a young botanist from Western New York was enabled to pursue his botanical studies in New York. This young botanist is now known as Prof. Asa Gray.

After obtaining his medical degree, Dr. Torrey took an office in New York City, but the attractions of botany, mineralogy, entomology and chemistry prevented him from applying himself seriously to practice.

Soon after he was graduated, the expedition of Maj. Long was proposed, and Dr. Torrey was offered the position of botanist. He was greatly tempted to accept this opportunity for botanical distinction, but he had formed ties which were strong enough to keep him at home. Dr. Baldwin was appointed in his place and upon the death of Baldwin, who was an almost hopeless invalid from the start, the duties of botanist were performed by the surgeon of the expedition, Dr. James.

In 1820, Dr. Torrey published in Silliman's Journal "A Notice of Plants collected by Capt. N. Douglas around the Great Lakes at the Head Waters of the Mississippi.

In 1823, he contributed to the Annals of the Lyceum of Natural History "Descriptions of some new or rare plants from the Rocky Mountains, collected by Dr. Edwin P. James."

In 1824 he published "A Flora of the Northern and Middle States, or Systematic Arrangement and Description of all the Plants heretofore discovered North of Virginia." In this year he was married to Miss Eliza Robinson Shaw, and was settled at West Point as Professor of Chemistry in the U. S. Military Academy. This Flora, the concluding pages of which were written on the morning of its author's wedding day, is now rare, a large portion of the edition having been destroyed by fire. It contains over 500 species and includes the first twelve classes of the Linnæan system. In this work the author first manifested his acuteness in diagnosis, and it is remarkable for its elaborate and minute descriptions.

In this same year, 1824, we find "Descriptions of New Grasses from the Rocky Mountains" in the Annals of the Lyceum, and a "Monograph of the North American species of Carex," of which he was joint author with Schweinitz. Schweinitz had placed the paper in Dr. Torrey's hands, to edit and supervise the printing of it, during the author's absence in Europe. When Schweinitz found how much the value of his monograph had been increased by additions and revision, he insisted that Torrey's name should appear as joint author, and that it should be quoted as Schweinitz & Torrey.

Foreseeing that the Linnæan system was to be supplanted by one founded upon a more profound knowledge of the structure of plants and broader views of their relationships, the Flora was not continued beyond its first volume, but its author, in 1826, published a Compendium which contained condensed descriptions of the plants enumerated in the first volume of the Flora and of those that would have been given in the second volume.

In 1826, Dr. Torrey read before the Lyceum "Some Account of a Collection of Plants made during a Journey to and from the Rocky Mountains, in the Summer of 1820, by Edwin P. James, M.D., Assistant Surgeon, U. S. Army." This memoir was not published until 1828. Before its publication its author, after three years' service, left West Point to assume the chair of Chemistry and Botany in the N. Y. College of Physicians and Surgeons. This account of Dr. James's Rocky Mountain plants is of especial interest as being the first botanical publication of importance in this country in which the plants were arranged according to the Natural System. Shortly before, the Abbe Correa had arranged a list, in which the genera named in Muhlenberg's catalogue were placed according to the system of Jussieu.

In 1831, Lindley's introduction to Botany was re-published in this country. Dr. Torrey prepared a catalogue of the North American genera, arranged according to Lindley's orders, which was published with the work and also separately in the pamphlet form.

Dr. Torrey was always fond of studying obscure and difficult orders, hence the Borraginaceæ, Chenopodiaceæ, Amarantaceæ, and Cyperaceæ had particular attractions for him. As early as 1836 he published in the Annals of the Lyceum his "Monograph of the Cyperaceæ." This contained, besides a full account of the other genera, a complete revision of the genus Carex, and was a most valuable contribution to North American botany, as it contained an elaboration of the species collected by Drummond, Richardson, Burke, aud other British collectors, whose specimens were loaned by Sir William Hooker.

The Geological Survey of the State of New York was organized in 1836, and Dr. Torrey was appointed as its Botanist. His report, which was published in 1843, forms two enormous 4to volumes, filled with detailed descriptions of all the plants known to belong to the State, and is illustrated with 161 plates. When we consider that this work was produced amid the labors of his professorship at the Medical College, to which had been added those of the Chair of Chemistry at Princeton, we must wonder at the untiring industry of its author.

The first number of the "Flora of North America, by John Torrey and Asa Gray," appeared in 1838, the fruit of a most happy association, which continued for over forty years, and which has done so much for the advancement of American botany.

The question why was not Torrey and Gray's Flora completed, has often been asked by those not familiar with the rapid progress of botanical discovery. The reason was this: By the time the first volume of the Flora was finished, new materials belonging to the orders contained in that volume demanded a large appendix, and a few years later new discoveries were so numerous that it was impossible for the work to keep pace with them. Its authors pursued the best course; instead of giving their time to the completion of the Flora and allowing the new materials to pass—as they inevitably would have done—into the hands of European botanists, they turned their attention to studying and recording them. Now these discoveries of American plants are mainly recorded by American botanists in American publications, and to secure this result it was well that the Flora was suspended. In this matter—of securing the new plants—both Doctors Torrey and Gray worked, sometimes together, oftener independently, but always with the fullest co-operation. The result has been a series of memoirs unequalled in scientific value by any that have been produced in recent botanical litarature. In chronological order we find that Dr. Torrey published in:

1843, Botany of Nicollet's Report;
1845, Botany of Fremont's 1st and 2d Expeditions;
1848, Botany of Emory's Military Reconnaissance;
1850, A Memoir on Batis. A Memoir on Darlingtonia and Plantæ Fremontianæ were accepted for the Smithsonian Contributions and published a year or two later.
1852, Botany of Stansbury's Report of his explorations in the region of Great Salt Lake;
1853, The Plants of Marcy's Red River Expedition;
1854, Botany of Sitgreave's Zuni and Colorado Journey.

The reports of the collections of the various Pacific Railroad surveys were published at intervals from 1855 to 1860. and then not in the order in which they were written.

Enumerating them as they occur in the volumes, we find in Vol. II: The Botany of Pope's, Beckwith's and Gunnison's expeditions, three comparatively brief memoirs in which Dr. Gray's name is mentioned as joint author.

Vol. IV: "Botany of Whipple's Expedition," the most important of all these Railroad surveys in botanical results.

Vol. V: "Botany of Lieut. Williamson's Report."

Vol. VIII: "Botany of Lieut. Parke's Expedition."

In other volumes of the railroad surveys are botanical reports by Newbury, Durand and others, to each of which Dr. Torrey contributed important materials, in many cases working up whole orders.

1861. The Report of Lieut. Ives' Exploration of the Colorado was published with a Botanical Appendix, mainly by Dr. Torrey.

The Report upon the Botany of the Mexican Boundary was published in 1859, the most voluminous, as it is the most important, of all these contributions to the botany of the far West. The survey was, on account of various changes, prolonged over a period of five years or more; it passed over a vast territory, which, for the most part was botanically new. Parry, Wright, Bigelow, Schott and Thurber all contributed their collections to make up this exceedingly valuable report, one which may fitly close the record of Dr. Torrey's more important contributions to science.

After the Report of the Botany of the Mexican Boundary was completed, Dr. Torrey transferred his invaluable herbarium and his library to Columbia College. As regards this herbarium, no other collection contains so many typical specimens from which the original descriptions were drawn. After it had been transferred to its new quarters it needed re-arrangement. Specimens had accumulated more rapidly than they could be disposed of, and all those collected by the recent expeditions had to be incorporated with the general herbarium. For several years succeeding the publication of the Report of the Mexican Boundary, Dr. Torrey was employed in herbarium work. No hand but his could properly perform this scientific drudgery, and he went at it with a perseverance that in time brought it to completion.

During these years of herbarium work, necessary though irksome, he was constantly examining plants and making sketches that might be useful thereafter. It was a peculiarity of Dr. Torrey that he always recorded his observations by means of the pencil, and if we look through the herbarium there will be found drawings of minute structure by hundreds, giving at a glance what he saw in examining a plant. While he published no drawings as his own, we can find traces of his handi-work all through the illustrations to his various memoirs.

The last important botanical contribution of Dr. Torrey was "The Revision of the Eriogoneae," the joint work of himself and Dr. Gray, published in the Proceedings of the American Academy in 1870.

Many years ago he elaborated that portion of the collections made upon the Pacific coast by the botanists of Wilkes' expedition. This, through the failure of appropriations, was not published upon its completion. One of the last acts of its author's life was to look over the manuscript of this report and commit its final revision for publication to Dr. Gray.

The fondness of Dr. Torrey for sciences other than botany has been already alluded to. At one time he was an enthusiastic student of entomology, or, as he expressed it—he "had the fever."

At one time he gave much attention to mineralogy, a pursuit in which he was often associated with another botanist—Nuttall.

The earlier volumes of Silliman's Journal contain important contributions to mineralogy from his pen. Mineralogy is so intimately related to chemistry that he retained through life a lively interest in this department of science.

Those who have regarded Dr. Torrey as a botanist only, will be surprised to know that the avocation of his life was that of a chemist, and that the works that have made him an undying name in science were done in what he regarded as his hours of recreation.

During the last years of his life he held the position of Assayer in the U. S. Assay office in New York, and this connection with the Treasury Department had one happy result. Although he had done so much in describing and naming the plants of the far west, he had traveled but little: he "had never seen a prairie," as he was once heard to say with a tone of sadness, and had never ascended a mountain higher than Mt. Marcy. It was a graceful act of the Secretary of the Treasury to send him in 1865 upon a confidential mission to California. He went by the way of the Isthmus and was able to see and enjoy the luxuriant vegetation of the tropics, and, when he reached his destination, was met by an order to make some extended explorations, for the accomplishment of which a revenue cutter was placed at his command. While in California he was able to see many of the plants he had described growing in their native localities, and to make considerable collections for the herbarium.

In 1872 he made another journey to California, this time by railroad. Upon his return journey he tarried awhile among the Rocky Mountains and ascended Torrey's Peak, which was several years before thus named by his former pupil, Dr. Parry. It is pleasant to think of him as passing the last days of his botanizing, in the evening of his life, among the alpine plants which in his youth he first made known to the botanical world.

Neither this last journey to California nor one made the previous winter to Florida served to arrest the disease which those who saw him only at intervals could perceive was gradually wasting his body, though it did not dim his intellect or impair his cheerfulness. At sunset on the tenth of March, 1873, he peacefully went to his rest.

Some Notes from Freshmen.

Professor W. J. Beal, of the Agricultural College, Lansing, Michigan, has just sent to us a few notes taken from the theses of his Freshmen. During a term of 12 weeks, when they begin daily lessons, each one writes a thesis on topics like those given below. A few hints are given directing the student how to proceed. After